

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

United States Patent and Trademark
Office
(Box PCT)
Crystal Plaza 2
Washington, DC 20231
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 03 June 1998 (03.06.98)	
International application No. PCT/FI97/00605	Applicant's or agent's file reference 6J14PCj
International filing date (day/month/year) 07 October 1997 (07.10.97)	Priority date (day/month/year) 08 October 1996 (08.10.96)
Applicant PYRHÖNEN, Juha	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
07 May 1998 (07.05.98)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was

☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

<p>The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland</p> <p>Facsimile No.: (41-22) 740.14.35</p>	<p>Authorized officer C. Carrié</p> <p>Telephone No.: (41-22) 338.83.38</p>
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PCT

REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

For receiving Office use only

International Application No.

International Filing Date

Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference
(if desired) (12 characters maximum) 6J14PCj

Box No. I TITLE OF INVENTION

AN ELECTRIC MACHINE CONSTRUCTION AND A METHOD FOR AN ELECTRIC MACHINE

Box No. II APPLICANT

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (i.e. country) of residence if no State of residence is indicated below.)

ALAMÄKI, Jarmo
Välikatu 27
FIN-53200 Lappeenranta
Finland

☐ This person is also inventor.

Telephone No.

Facsimile No.

Teleprinter No.

State (i.e. country) of nationality:

FI

State (i.e. country) of residence:

FI

This person is applicant for the purposes of:

☐ all designated States

☒ all designated States except the United States of America

☐ the United States of America only

☐ the States indicated in the Supplemental Box

Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (i.e. country) of residence if no State of residence is indicated below.)

PYRHÖNEN, Juha
Kotkankatu 32
FIN-53850 Lappeenranta
Finland

This person is:

☐ applicant only

☒ applicant and inventor

☐ inventor only (If this check-box is marked, do not fill in below.)

State (i.e. country) of nationality:

FI

State (i.e. country) of residence:

FI

This person is applicant for the purposes of:

☐ all designated States

☐ all designated States except the United States of America

☒ the United States of America only

☐ the States indicated in the Supplemental Box

☐ Further applicants and/or (further) inventors are indicated on a continuation sheet.

Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE

The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:

☒ agent

☐ common representative

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

Borenus & Co Oy Ab
Kansakoulukuja 3
FIN-00100 Helsinki
Finland

Telephone No.

+358-9-492 593

Facsimile No.

+358-9-493 542

Teleprinter No.

☐ Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

Box No.V DESIGNATION OF STATES

The following designations are hereby made under Rule 4.9(a) (mark the applicable check-boxes; at least one must be marked):

Regional Patent

- ☒ AP ARIPO Patent: GH Ghana, KE Kenya, LS Lesotho, MW Malawi, SD Sudan, SZ Swaziland, UG Uganda, ZW Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT
- ☒ EA Eurasian Patent: AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT
- ☒ EP European Patent: AT Austria, BE Belgium, CH and LI Switzerland and Liechtenstein, DE Germany, DK Denmark, ES Spain, FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, and any other State which is a Contracting State of the European Patent Convention and of the PCT
- ☒ OA OAPI Patent: BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Côte d'Ivoire, CM Cameroon, GA Gabon, GN Guinea, ML Mali, MR Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT (if other kind of protection or treatment desired, specify on dotted line)

National Patent (if other kind of protection or treatment desired, specify on dotted line):

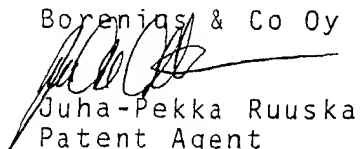
- | | |
|------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> AL Albania | <input checked="" type="checkbox"/> LV Latvia |
| <input checked="" type="checkbox"/> AM Armenia | <input checked="" type="checkbox"/> MD Republic of Moldova |
| <input checked="" type="checkbox"/> AT Austria | <input checked="" type="checkbox"/> MG Madagascar |
| <input checked="" type="checkbox"/> AU Australia | <input checked="" type="checkbox"/> MK The former Yugoslav Republic of Macedonia |
| <input checked="" type="checkbox"/> AZ Azerbaijan | <input checked="" type="checkbox"/> MN Mongolia |
| <input checked="" type="checkbox"/> BA Bosnia and Herzegovina | <input checked="" type="checkbox"/> MW Malawi |
| <input checked="" type="checkbox"/> BB Barbados | <input checked="" type="checkbox"/> MX Mexico |
| <input checked="" type="checkbox"/> BG Bulgaria | <input checked="" type="checkbox"/> NO Norway |
| <input checked="" type="checkbox"/> BR Brazil | <input checked="" type="checkbox"/> NZ New Zealand |
| <input checked="" type="checkbox"/> BY Belarus | <input checked="" type="checkbox"/> PL Poland |
| <input checked="" type="checkbox"/> CA Canada | <input checked="" type="checkbox"/> PT Portugal |
| <input checked="" type="checkbox"/> CH and LI Switzerland and Liechtenstein | <input checked="" type="checkbox"/> RO Romania |
| <input checked="" type="checkbox"/> CN China | <input checked="" type="checkbox"/> RU Russian Federation |
| <input checked="" type="checkbox"/> CU Cuba | <input checked="" type="checkbox"/> SD Sudan |
| <input checked="" type="checkbox"/> CZ Czech Republic | <input checked="" type="checkbox"/> SE Sweden |
| <input checked="" type="checkbox"/> DE Germany | <input checked="" type="checkbox"/> SG Singapore |
| <input checked="" type="checkbox"/> DK Denmark | <input checked="" type="checkbox"/> SI Slovenia |
| <input checked="" type="checkbox"/> EE Estonia | <input checked="" type="checkbox"/> SK Slovakia |
| <input checked="" type="checkbox"/> ES Spain | <input checked="" type="checkbox"/> SL Sierra Leone |
| <input checked="" type="checkbox"/> FI Finland | <input checked="" type="checkbox"/> TJ Tajikistan |
| <input checked="" type="checkbox"/> GB United Kingdom | <input checked="" type="checkbox"/> TM Turkmenistan |
| <input checked="" type="checkbox"/> GE Georgia | <input checked="" type="checkbox"/> TR Turkey |
| <input checked="" type="checkbox"/> GH Ghana | <input checked="" type="checkbox"/> TT Trinidad and Tobago |
| <input checked="" type="checkbox"/> HU Hungary | <input checked="" type="checkbox"/> UA Ukraine |
| <input checked="" type="checkbox"/> IL Israel | <input checked="" type="checkbox"/> UG Uganda |
| <input checked="" type="checkbox"/> IS Iceland | <input checked="" type="checkbox"/> US United States of America |
| <input checked="" type="checkbox"/> JP Japan | <input checked="" type="checkbox"/> UZ Uzbekistan |
| <input checked="" type="checkbox"/> KE Kenya | <input checked="" type="checkbox"/> VN Viet Nam |
| <input checked="" type="checkbox"/> KG Kyrgyzstan | <input checked="" type="checkbox"/> YU Yugoslavia |
| <input checked="" type="checkbox"/> KP Democratic People's Republic of Korea | <input checked="" type="checkbox"/> ZW Zimbabwe |
| <input checked="" type="checkbox"/> KR Republic of Korea | |
| <input checked="" type="checkbox"/> KZ Kazakstan | |
| <input checked="" type="checkbox"/> LC Saint Lucia | |
| <input checked="" type="checkbox"/> LK Sri Lanka | |
| <input checked="" type="checkbox"/> LR Liberia | |
| <input checked="" type="checkbox"/> LS Lesotho | |
| <input checked="" type="checkbox"/> LT Lithuania | |
| <input checked="" type="checkbox"/> LU Luxembourg | |

Check-boxes reserved for designating States (for the purposes of a national patent) which have become party to the PCT after issuance of this sheet:

- ☒ .ID. Indonesia
- ☐ ..
- ☐ ..
- ☐ ..
- ☐ ..

In addition to the designations made above, the applicant also makes under Rule 4.9(b) all designations which would be permitted under the PCT except the designation(s) of

The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. (Confirmation of a designation consists of the filing of a notice specifying that designation and the payment of the designation and confirmation fees. Confirmation must reach the receiving Office within the 15-month time limit.)

Box No. VI PRIORITY CLAIM		Further priority claims are indicated in the Supplemental Box <input type="checkbox"/>	
The priority of the following earlier application(s) is hereby claimed:			
Country (in which, or for which, the application was filed)	Filing Date (day/month/year)	Application No.	Office of filing (only for regional or international application)
item (1) FI	(08.10.96) 08 October 1996	U960512	
item (2)			
item (3)			
Mark the following check-box if the certified copy of the earlier application is to be issued by the Office which for the purposes of the present international application is the receiving Office (a fee may be required): <input type="checkbox"/> The receiving Office is hereby requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) identified above as item(s) :			
Box No. VII INTERNATIONAL SEARCHING AUTHORITY			
Choice of International Searching Authority (ISA) (If two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used): <u>ISA / SE</u>			
Earlier search Fill in where a search (international, international-type or other) by the International Searching Authority has already been carried out or requested and the Authority is now requested to base the international search, to the extent possible, on the results of that earlier search. Identify such search or request either by reference to the relevant application (or the translation thereof) or by reference to the search request: Country (or regional Office): _____ Date (day/month/year): _____ Number: _____			
Box No. VIII CHECK LIST			
This international application contains the following number of sheets: 1. request : 3 sheets 2. description : 6 sheets 3. claims : 2 sheets 4. abstract : 1 sheets 5. drawings : 7 sheets Total : 19 sheets		This international application is accompanied by the item(s) marked below: 1. <input checked="" type="checkbox"/> separate signed power of attorney 2. <input type="checkbox"/> copy of general power of attorney 3. <input type="checkbox"/> statement explaining lack of signature 4. <input type="checkbox"/> priority document(s) identified in Box No. VI as item(s): 5. <input checked="" type="checkbox"/> fee calculation sheet 6. <input type="checkbox"/> separate indications concerning deposited microorganisms 7. <input type="checkbox"/> nucleotide and/or amino acid sequence listing (diskette) 8. <input type="checkbox"/> other (specify):	
Figure No. <u>2</u> of the drawings (if any) should accompany the abstract when it is published.			
Box No. IX SIGNATURE OF APPLICANT OR AGENT			
Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request). <div style="text-align: center;">  Borenius & Co Oy Ab Juha-Pekka Ruuskanen Patent Agent </div>			

For receiving Office use only	
1. Date of actual receipt of the purported international application: 3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application: 4. Date of timely receipt of the required corrections under PCT Article 11(2): 5. International Searching Authority specified by the applicant: <u>ISA /</u>	2. Drawings: <input type="checkbox"/> received: <input type="checkbox"/> not received: 6. <input type="checkbox"/> Transmittal of search copy delayed until search fee is paid

For International Bureau use only
Date of receipt of the record copy by the International Bureau:

IPEA/ SE

CHAPTER II

under Article 31 of the Patent Cooperation Treaty:
The undersigned requests that the international application specified below be the subject of
international preliminary examination according to the Patent Cooperation Treaty.

For International Preliminary Examining Authority use only	
Identification of IPEA	Date of receipt of DEMAND
Box No. I IDENTIFICATION OF THE INTERNATIONAL APPLICATION	
Applicant's or agent's file reference 6J14PCj	
International application No. PCT/FI97/00605	International filing date (day/month/year) 07 Oct 1997 (07.10.97)
(Earliest) Priority date (day/month/year) 08 Oct 1996 (08.10.96)	
Title of invention AN ELECTRIC MACHINE CONSTRUCTION AND A METHOD FOR AN ELECTRIC MACHINE	
Box No. II APPLICANT(S)	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)	
ALAMÄKI, Jarmo Välikatu 27 FIN-53200 Lappeenranta Finland	
Telephone No.:	
Facsimile No.:	
Teleprinter No.:	
State (i.e. country) of nationality: FI	State (i.e. country) of residence: FI
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)	
PYRHÖNEN, Juha Kotkankatu 32 FIN-53850 Lappeenranta Finland	
State (i.e. country) of nationality: FI	State (i.e. country) of residence: FI
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)	
State (i.e. country) of nationality:	State (i.e. country) of residence:
<input type="checkbox"/> Further applicants are indicated on a continuation sheet.	

Box No. III AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCEThe following person is ☒ agent ☐ common representativeand ☒ has been appointed earlier and represents the applicant(s) also for international preliminary examination.☐ is hereby appointed and any earlier appointment of (an) agent(s)/common representative is hereby revoked.☐ is hereby appointed, specifically for the procedure before the International Preliminary Examining Authority, in addition to the agent(s)/common representative appointed earlier.Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)*Borenus & Co Oy Ab
Kansakoulukuja 3
FIN-00100 Helsinki
Finland

Telephone No.:

+358-9-6866840

Facsimile No.:

+358-9-68668444

Teleprinter No.:

☐ Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.**Box No. IV STATEMENT CONCERNING AMENDMENTS**

The applicant wishes the International Preliminary Examining Authority*

(i) ☒ to start the international preliminary examination on the basis of the international application as originally filed.(ii) ☐ to take into account the amendments under Article 34 of☐ the description (amendments attached).☐ the claims (amendments attached).☐ the drawings (amendments attached).(iii) ☐ to take into account any amendments of the claims under Article 19 filed with the International Bureau (a copy is attached).(iv) ☐ to disregard any amendments of the claims made under Article 19 and to consider them as reversed.(v) ☐ to postpone the start of the international preliminary examination until the expiration of 20 months from the priority date unless that Authority receives a copy of any amendments made under Article 19 or a notice from the applicant that he does not wish to make such amendments (Rule 69.1(d)). *(This check-box may be marked only where the time limit under Article 19 has not yet expired.)*

* Where no check-box is marked, international preliminary examination will start on the basis of the international application as originally filed or, where a copy of amendments to the claims under Article 19 and/or amendments of the international application under Article 34 are received by the International Preliminary Examining Authority before it has begun to draw up a written opinion or the international preliminary examination report, as so amended.

Box No. V ELECTION OF STATES☒ The applicant hereby elects all eligible States *(that is, all States which have been designated and which are bound by Chapter II of the PCT)* except*(If the applicant does not wish to elect certain eligible States, the name(s) or country code(s) of those States must be indicated above.)*

Box No. VI CHECK LIST

The demand is accompanied by the following documents for the purposes of international preliminary examination:

- | | | |
|----------------------------------------------------|---|--------|
| 1. amendments under Article 34 | | |
| description | : | sheets |
| claims | : | sheets |
| drawings | : | sheets |
| 2. letter accompanying amendments under Article 34 | : | sheets |
| 3. copy of amendments under Article 19 | : | sheets |
| 4. copy of statement under Article 19 | : | sheets |
| 5. other (specify): | : | sheets |

For International Preliminary
Examining Authority use only

received not received

<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

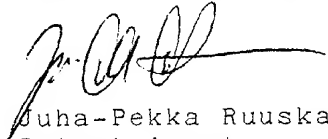
The demand is also accompanied by the item(s) marked below:

- | | |
|--------------------------------------------------------------------|--------------------------------------------------------------|
| 1. <input type="checkbox"/> separate signed power of attorney | 4. <input checked="" type="checkbox"/> fee calculation sheet |
| 2. <input type="checkbox"/> copy of general power of attorney | 5. <input type="checkbox"/> other (specify): |
| 3. <input type="checkbox"/> statement explaining lack of signature | |

Box No. VII SIGNATURE OF APPLICANT, AGENT OR COMMON REPRESENTATIVE

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the demand).

Borenus & Co Oy Ab


Juha-Pekka Ruuskanen
Patent Agent

For International Preliminary Examining Authority use only

1. Date of actual receipt of DEMAND:

2. Adjusted date of receipt of demand due to CORRECTIONS under Rule 60.1(b):

3. ☐ The date of receipt of the demand is AFTER the expiration of 19 months from the priority date and item 4 or 5, below, does not apply. ☐ The applicant has been informed accordingly.

4. ☐ The date of receipt of the demand is WITHIN the period of 19 months from the priority date as extended by virtue of Rule 80.5.

5. ☐ Although the date of receipt of the demand is after the expiration of 19 months from the priority date, the delay in arrival is EXCUSED pursuant to Rule 82.

For International Bureau use only

Demand received from IPEA on:

INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI 97/00605

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: H02K 9/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: H02K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0361925 A2 (JOHNSON, FREDERICK ALISTAIR), 4 April 1990 (04.04.90), column 1, line 45 - line 50, figure 1 --	1-12
X	US 5306972 A (P.R. HOKANSON ET AL.), 26 April 1994 (26.04.94), figures 6,7, abstract --	1-12
X	Patent Abstracts of Japan, abstract of JP 63-245240 A (BABA YOSHINAO), 12 October 1988 (12.10.88), figure 6, abstract -- -----	1-12



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier document but published on or after the international filing date	"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"I" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search	Date of mailing of the international search report
4 March 1998	05 th -03- 1998
Name and mailing address of the ISA/ Swedish Patent Office Box 5055, S-102 42 STOCKHOLM Facsimile No. +46 8 666 02 86	Authorized officer Håkan Sandh Telephone No. +46 8 782 25 00

INTERNATIONAL SEARCH REPORT
Information on patent family members

03/02/98

International application No.
PCT/FI 97/00605

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0361925 A2	04/04/90	GB 2223362 A	04/04/90
US 5306972 A	26/04/94	NONE	

06 - 02 - 1998

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 6J14PCj	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.
International application No. PCT/FI 97/00605	International filing date (<i>day/month/year</i>) 7 October 1997
	(Earliest) Priority Date (<i>day/month/year</i>) 8 October 1996
Applicant ALAMÄKI, Jarmo et al.	

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 2 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. ☐ Certain claims were found unsearchable (See Box I).
2. ☐ Unity of invention is lacking (See Box II).
3. ☐ The international application contains disclosure of a **nucleotide and/or amino acid sequence listing** and the international search was carried out on the basis of the sequence listing
 - ☐ filed with the international application.
 - ☐ furnished by the applicant separately from the international application,
 - ☐ but not accompanied by a statement to the effect that it did not include matter going beyond the disclosure in the international application as filed.
 - ☐ transcribed by this Authority.
4. With regard to the title, ☒ the text is approved as submitted by the applicant.
☐ the text has been established by this Authority to read as follows:
5. With regard to the abstract,
 - ☒ the text is approved as submitted by the applicant.
 - ☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.
6. The figure of the **drawings** to be published with the abstract is:
 Figure No. 2
 - ☒ as suggested by the applicant.
 - ☐ because the applicant failed to suggest a figure.
 - ☐ because this figure better characterizes the invention.☐ None of the figures.

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 6J14PCj	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/FI97/00605	International filing date (day/month/year) 07.10.1997	Priority date (day/month/year) 08.10.1996
International Patent Classification (IPC) or national classification and IPC ₆ H02K 9/04		
Applicant ALAMÄKI, Jarmo et al.		

<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>4</u> sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of <u>3</u> sheets.</p>
<p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the report</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input type="checkbox"/> Certain defects in the international application</p> <p>VIII <input type="checkbox"/> Certain observations on the international application</p>

Date of submission of the demand 07.05.1998	Date of completion of this report 27.01.1999
Name and mailing address of the IPEA/SE Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. 08-667 72 88	Authorized officer Håkan Sandh Telephone No. 08-782 25 00

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/FI97/00605

I. Basis of the report

1. This report has been drawn on the basis of *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.)*:

- ☐ the international application as originally filed.
- ☒ the description, pages 1-6, as originally filed,
pages _____, filed with the demand,
pages _____, filed with the letter of _____,
pages _____, filed with the letter of _____.
- ☒ the claims, Nos. _____, as originally filed,
Nos. _____, as amended under Article 19,
Nos. _____, filed with the demand,
Nos. 1-12, filed with the letter of 26.11.1998,
Nos. _____, filed with the letter of _____.
- ☐ the drawings, sheets/fig 1-4, as originally filed,
sheets/fig _____, filed with the demand
sheets/fig _____, filed with the letter of _____,
sheets/fig _____, filed with the letter of _____.

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/fig _____

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the supplemental Box (Rule 70.2(c)).

4. Additional observations, if necessary:

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/FI97/00605

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. Statement**

Novelty (N)	Claims	<u>1-12</u>	YES
	Claims		NO
Inventive step (IS)	Claims	<u>1-12</u>	YES
	Claims		NO
Industrial applicability (IA)	Claims	<u>1-12</u>	YES
	Claims		NO

2. Citations and explanations

The invention relates to an electric machine construction comprising a stator space defined by a shell and end portions at both ends of the shell. According to the invention, cooling medium is arranged to be sucked into the stator space by means at the vicinity of both end portions of the stator space through openings in the shell.

Documents cited in the International Search Report:

- (A) EP 0361925
- (B) US 5306972
- (C) JP 63-245240

A discloses an electric motor comprising a stator space into which cooling medium is sucked by rotation of the rotor and discharged through ventilation ducts in the stator and the stator shell. Both ends of the rotor shaft is provided with power output facilities.

B discloses an electric motor comprising forced air cooling with air inlet and outlet in the shell.

C discloses an electric motor comprising a stator space into which the cooling air is sucked by rotation of the rotor and the air is discharged through radial ducts in the stator.

The claimed invention differs from the prior in that the cooling medium is drawn by suction from both ends of the shell into the stator space through an opening in the shell. The suction of the cooling air as defined by the invention, especially in combination with the throttling effect of the inlet openings, results in an cooler air stream than the prior art blowing of the cooling medium.

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Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: BOX V

Accordingly, the invention is novel. Since there is no teaching in the cited documents that would lead a skilled person to the invention, the invention is considered to involve an inventive step. The invention is industrially applicable.

Claims

1. An electric machine construction, comprising
a stator space (9) defined by a shell (8) and end portions (6) at both ends of the shell (8),
stator means and rotor means (20) having a first end and a second end disposed within said stator space (9),
c h a r a c t e r i z e d by comprising
at least one cooling medium inlet opening (14,34) in the shell (8) and positioned intermediate the ends of the rotor means (20),
means (13) at the vicinity of both end portions (6) of the stator space (9) for providing suction for drawing cooling medium into said stator space (9),
wherein the arrangement is such that the cooling medium is drawn by the suction into the stator space (9) through said at least one inlet opening (14,34) and that the cooling medium is removed at the vicinity of both end portions (6) of the stator space (9).
2. An electric machine construction according to claim 1, c h a r a c t e r i z e d in that the conduction of the cooling medium into the stator space (9), circulation within the stator space and removal (12) from the stator space is arranged such that it occurs symmetrically relative to the electric machine construction (10).
3. An electric machine construction according to claim 1 or 2, c h a r a c t e r i z e d in that said end portions (6) are arranged further to form attachment means (5) of the electric machine construction for the attachment thereof to a mounting bed.
4. An electric machine construction according to any of the preceding claims, c h a r a c t e r i z e d in that the both ends of the electric machine construction (10) are provided with power output shafts (4).

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5. An electric machine construction according to any of the preceding claims, characterized in that the apparatus (30) to be driven by the electric machine (10) is attached (32) directly to the end portion (6) of the electric machine construction, whereby the attachment means (5) integrated in the end portion (6) of the machine construction (10) form the means for attaching the integrated apparatus assembly to a bed.

6. An electric machine construction according to any of the preceding claims, characterized in that it is further provided with blower means so as to intensify the cooling medium flow.

7. An electric machine construction according to any of the preceding claims, characterized in that it further comprises heat exchanger means (24) provided within a space (23) between the outer surface of the shell (8) and the outer housing for cooling of the cooling medium flow, the construction being arranged to enable a closed circulation (25,14,9,12,23) of the cooling medium flow.

8. A method for an electric machine construction comprising a stator space (9) defined by a shell (8) and end portions (6) at the either ends of the shell (8), wherein stator means and rotor means of the electric machine are disposed within said stator space, characterized in that cooling medium is drawn into the stator space (9) through at least one cooling medium inlet opening (14,34) in said shell (8) intermediate the ends of the rotor means (20) by means of suction caused by means (13) for providing the suction, said means (13) being provided at the vicinity of both end portions (6), and the cooling medium is removed at the vicinity of both ends portions (6) of the stator space (9).

9. A method according to claim 8, characterized in that the suction aided conduction of the cooling medium

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into the stator space (9), circulation within the stator space and removal (12) from the stator space occurs symmetrically relative to the electric machine construction (10).

10. A method according to claim 8 or 9, characterized in that it further includes mounting of an apparatus (30) to be driven by the electric machine (10) directly to the end portion (6) of the electric machine construction, and utilizing the attachment means (5) integrated in the end portion (6) of the machine construction (10) in attaching the integrated apparatus assembly to a bed.

11. A method according to any of claims 8 to 10, characterized in that it further includes intensifying the cooling medium flow by blower means.

12. A method according to any of claims 8 to 11, characterized in that it further includes cooling of the cooling medium flow by heat exchanger means (24) provided within a space (23) between the outer surface of the shell (8) and the outer housing so as to enable a closed circulation (25,14,9,12,23) of the cooling medium flow.